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# **The IEEE Standard Dictionary of Electrical and Electronics Terms**

**Sixth Edition**

**Standards Coordinating Committee 10, Terms and Definitions**  
**Jane Radatz, Chair**

This standard is one of a number of information technology dictionaries being developed by standards organizations accredited by the American National Standards Institute. This dictionary was developed under the sponsorship of voluntary standards organizations, using a consensus-based process.

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## fault isolation

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trol elements to detect overcurrents and control the fault interrupter. (PE/SWG) C37.100-1992

**fault isolation (1) (test, measurement, and diagnostic equipment)** Tests performed to isolate within the unit under test. (MIL) [2]

(2) Fault localization to a degree sufficient to undertake repair. (ATL) 1232-1995

**fault localization** The reduction of ambiguity by the application of tests, observations, or other information. (ATL) 1232-1995

**fault management** In networking, a management function that is defined for detecting, isolating, and recovering from abnormal network behavior. *Synonym:* failure management. (C) 610.7-1995

**fault masking** *See:* masking, fault.

**fault, permanent** A continuous and stable failure or error. (BA/C) 896.3-1993

**fault removal** *See:* removal, fault.

**fault resistance (surge arresters)** The resistance of that part of the fault path associated with the fault itself. (PE) [8], [84]

**fault secure** Pertaining to a system or component in which no failures are produced from a prescribed set of faults. *See also:* fail soft; fail-safe; fault tolerance. (C) 610.12-1990

**fault seeding** *See:* error seeding.

**fault symptom (test, measurement, and diagnostic equipment)** A measurable or visible abnormality in an equipment parameters. (MIL) [2]

**fault time** *See:* down time.

**fault tolerance (1) (A) (software)** The ability of a system or component to continue normal operation despite the presence of hardware or software faults. *See also:* error tolerance; fail soft; fail-safe; fail-secure; robustness. (B) (software) The number of faults a system or component can withstand before normal operation is impaired. (C) (software) Pertaining to the study of errors, faults, and failures, and of methods for enabling systems to continue normal operation in the presence of faults. *See also:* recovery; redundancy; restart. (C) 610.12-1990

(2) The ability of a system or a component to continue normal operation despite the presence of hardware or software faults. (BA/C) 896.3-1993, 896.9-1994

(3) Methods and techniques aimed at providing a service complying with the specification in spite of faults. (BA/C) 896.9-1994

**fault tolerant (software)** Pertaining to a system or component that is able to continue normal operation despite the presence of faults. (C) 610.10-1994, 610.12-1990

**fault-tolerant sequential circuit** A sequential circuit designed so that a predetermined set of failures in internal state logic or output logic cause no error in the circuit output. (C) 610.10-1994

**fault, transient** A nonrecurring temporary error caused by temporary environmental conditions. (BA/C) 896.3-1993

**fault tree** An ordered arrangement of tests that are intended to lead to the localization of faults. (ATL) 1232-1995

**fault withstandability** The ability of electrical apparatus to withstand the effects of prescribed electrical fault current conditions without exceeding specified damage criteria. (PE/SWG) C37.100-1981s

**Faure plate (pasted plate) (storage cell)** A plate consisting of electroconductive material, which usually consists of lead-antimony alloy covered with oxides or salts of lead, that is subsequently transformed into active material. *See also:* battery. (EEC/PE) [119]

**fax** *See:* facsimile.

**FB+** *See:* Futurebus+.

**f-bits** *See:* frame bits

**FBP** *See:* FASTBUS protocol.

**FC assembly** *See:* flat cable assembly.

## feature extraction

**FCA** *See:* functional configuration audit.

**FCC** *See:* flow control character; Federal Communications Commission.

**FCFS** *See:* first-come, first-served.

**FCI** *See:* faulted circuit indicator.

**FCode** A computer programming language defined by this standard, which is semantically similar to the Forth programming language but is encoded as a sequence of binary byte codes representing a defined set of Forth definitions. (BA/C) 1275-1994

**FCode driver** A device driver, written in FCode, intended for use by Open Firmware and its client programs. (BA/C) 1275-1994

**FCode evaluator** The portion of Open Firmware that processes FCode programs by reading a sequence of bytes representing FCode numbers and executing or compiling the associated FCode functions. (BA/C) 1275-1994

**FCode function** A self-contained procedural unit of the FCode programming language to which an FCode number may be assigned. (BA/C) 1275-1994

**FCode number** A number from 0 to 4095 (conventionally written in hexadecimal as 0x00 to 0xFFFF) that denotes a particular FCode function. (BA/C) 1275-1994

**FCode probing** The process of locating and evaluating an FCode program. (BA/C) 1275-1994

**FCode program** A program encoded as a sequence of byte codes according to the rules of the FCode programming language. (BA/C) 1275-1994

**FCode source** An FCode program in text form. *See also:* tokenizer. (BA/C) 1275-1994

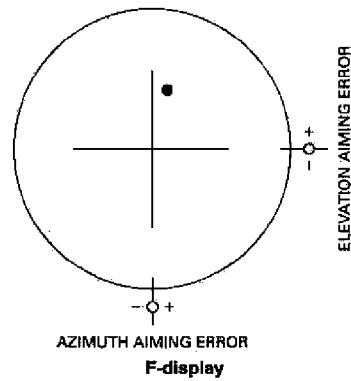
**FCS** *See:* frame check sequence.

**FDDI** *See:* fiber distributed data interface.

**FDHM** *See:* full width (duration) half maximum.

**F-display (A)** A type of radar display format. *See also:* display.

(B) A rectangular display in which a target appears as a centralized blip when the radar antenna is aimed at it. Horizontal and vertical aiming errors are respectively indicated by horizontal and vertical displacement of the blip.



(AE) 686-1990w

**FDM** *See:* frequency-division multiplexing.

**FE** *See:* format effector character.

**feasibility** The degree to which the requirements, design, or plans for a system or component can be implemented under existing constraints. (C) 610.12-1990

**feature (1) (metric practice)** An individual characteristic of a part, such as screw-thread, taper, or slot. *See also:* software feature. (QUL) 268-1982s

**(2) (image processing and pattern recognition)** In pattern recognition, an attribute of a pattern that may contribute to pattern classification; for example, size, texture, or shape. (C) 610.4-1990

**(3) A negotiable aspect of an interface.** (C/PA) 1224.1-1993

**feature extraction** A step in pattern recognition, in which measurements or observations are processed to find attributes that

**file attribute**

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**file offset**

trol mechanism shall only further restrict the access permissions defined by the file permission bits. An alternate access control mechanism shall:

- 1) Specify file permission bits for the file owner class, file group class, and file other class of the file, corresponding to the access permissions, to be returned by *stat()* or *fstat()*.
- 2) Be enabled only by explicit user action, on a per-file basis, by the file owner or a user with the appropriate privilege.
- 3) Be disabled for a file after the file permission bits are changed for that file with *chmod()*. The disabling of the alternate mechanism need not disable any additional mechanisms defined by an implementation.

Whenever a process requests file access permission for read, write, or execute/search, if no additional mechanism denies access, access is determined as follows:

- 1) If a process has the appropriate privilege:
  - a) If read, write, or directory search permission is requested, access is granted.
  - b) If execute permission is requested, access is granted if execute permission is granted to at least one user by the file permission bits or by an alternate access control mechanism; otherwise, access is denied.
- 2) Otherwise:
  - a) The file permission bits of a file contain read, write, and execute/search permissions for the file owner class, file group class, and file other class.
  - b) Access is granted if an alternate access control mechanism is not enabled and the requested access permission bit is set for the class (file owner class, file group class, or file other class) to which the process belongs, or if an alternate access control mechanism is enabled and it allows the requested access; otherwise, access is denied.

(C/PA) 9945-1-1996, 9945-2-1993

**file attribute** A property, feature, or characteristic of a file.

(C) 610.5-1990

**file attributes** The name and other identifiable properties of a file.

(C/PA) 1238.1-1994

**file cleanup** The removal of superfluous data from a file. *Synonym:* file tidying.

(C) 610.5-1990

**file description** *See:* open file description.

**file descriptor** (1) A per-process unique, nonnegative integer used to identify an open file for the purpose of file access.

(C/PA) 9945-1-1996, 9945-2-1993

(2) A value used to identify an open file for the purpose of file access. File descriptors are unique within a process.

(C/PA) 1003.5-1992

(3) A per-process unique non-negative integer value used to identify an open file for the purpose of file access.

(C/PA) 1003.5b-1995

**file directory** (A) A list of files and their locations within a computer system. *See also:* catalog. (B) A list of the files and their locations on a particular storage device or volume.

(C) 610.5-1990

**file gap** (1) An area on a storage medium, such as tape, used to indicate the end of a file.

(C) [20], [85]

(2) (data management) An unused area on a data medium between the end of one file or group of data and the beginning of another file or group of data.

(C) 610.5-1990

(3) An area between two consecutive files used to indicate the end of the file. *Note:* Frequently used for other purposes such as to indicate the end or beginning of some other group of data.

(C) 610.10-1994

**file group class** The property of a file indicating access permissions for a process related to the group identification of the process. A process is in the file group class of a file if the process is not in the file owner class and if the effective group ID or one of the supplementary group IDs of the process matches the group ID associated with the file. Other members

of the class may be implementation defined.

(C/PA) 1003.5-1992, 1003.5b-1995, 9945-1-1996, 9945-2-1993

**file hierarchy** A concept of the underlying system, as follows. Files in the system are organized in a hierarchical structure in which all of the nonterminal nodes are directories and all of the terminal nodes are any other type of file. Because multiple directory entries may refer to the same file, the hierarchy is properly described as a "directed graph."

(C/PA) 9945-1-1996, 9945-2-1993

**file layout** The arrangement and structure of data in a file. *Synonym:* file organization.

(C) 610.5-1990

**file-locking** *See:* lock.

**file maintenance** (1) (computers) The activity of keeping a file up to date by adding, changing, or deleting data.

(C) [20], [85]

(2) (data management) The activity of adding, changing, or deleting data in a file as needed.

(C) 610.5-1990

**file mark** A mark that identifies the end of a file.

(C) 610.10-1994

**file mode** An object containing the file permission bits and other characteristics of a file.

(C/PA) 9945-1-1996, 9945-2-1993

**file mode bits** The file permission bits, set-user-ID-on-execution bit (S\_ISUID), and set-group-ID-on-execution bit (S\_ISGID) of a file.

(C/PA) 9945-2-1993

**file name** (A) One or more characters used to identify a file.

(B) A name associated with a set of file data or output data.

(C) 610.5-1990

**filename** (1) A name consisting of 1 to {NAME\_MAX} bytes used to name a file. The characters composing the name may be selected from the set of all character values excluding the slash character and the null character. The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a pathname component. *See also:* pathname resolution.

(C/PA) 9945-1-1996, 9945-2-1993

(2) A POSIX.1 filename with characters drawn from the POSIX.1 portable filename character set.

(C/PA) 1387.2-1995

(3) A name consisting of 1 to POSIX.Filename\_Limit-Maxima'Last POSIX.POSIX\_Characters used to name a file. The characters composing the name may be selected from the set of all character values excluding the slash character and the null character. The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a pathname component.

(C/PA) 1003.5-1992

(4) A nonempty string that is used to name a file. A filename consists of, at most, POSIX.Limits.Filename\_Maxima 'Last components of type POSIX.POSIX\_Character. The characters composing the name may be selected from the set of all character values excluding the slash character and the null character. The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a pathname component. *See also:* pathname resolution.

(C/PA) 1003.5b-1995

**file offset** (1) The byte position in the file where the next I/O operation begins. Each open file description associated with a regular file, block special file, or directory has a file offset. A character special file that does not refer to a terminal device may have a file offset. There is no file offset specified for a pipe or FIFO.

(C/PA) 9945-1-1996, 9945-2-1993

(2) The POSIX.POSIX\_Character position in the file where the next I/O operation begins. Each open file description associated with a regular file, block special file, or directory has a file offset. A character special file that does not refer to a terminal device may have a file offset. There is no file offset specified for a pipe or FIFO.

(C/PA) 1003.5-1992

(3) The byte position in the file where the next I/O operation begins. Each open file description associated with a regular file, block special file, or directory has a file offset: A char-

acter special file that does not refer to a terminal device may have a file offset. There is no file offset specified for a pipe or FIFO. (C/PA) 1003.5b-1995

**filename character string** A sequence of characters from the portable filename character set, not including the / (slash) character. Within software definition files of exported catalogs, all such strings shall be encoded using IRV. (C/PA) 1387.2-1995

**file organization** The order of physical records within a file that determines the access method to be implemented in order to use the file. *See also:* file layout. (C) 610.5-1990

**File-Oriented Interpretive Language (FOIL)** A computer language, based on FORTRAN, used to provide conversational lesson-writing; used commonly in computer-aided instruction applications. (C) 610.13-1993

**file other class** (1) The property of a file indicating access permissions for a process related to the user and group identification of the process. A process is in the file other class of a file if the process is not in the file owner class or file group class. (C/PA) 9945-1-1996, 9945-2-1993

(2) A property of a file indicating access permissions for a process related to the user and group information of the process. A process is in the file other class of a file if the process is not in the file owner class or file group class. (C/PA) 1003.5-1992, 1003.5b-1995

**file owner class** (1) The property of a file indicating access permissions for a process related to the user identification of the process. A process is in the file owner class of a file if the effective user ID of the process matches the user ID of the file. (C/PA) 1003.5-1992, 9945-1-1996, 9945-2-1993

(2) A property of a file indicating access permissions for a process related to the user identification of the process. A process is in the file owner class of a file if the effective user ID of the process matches the user ID of the file. (C/PA) 1003.5b-1995

**file permission** (1) Information about a file that is used, along with other information, to determine if a process has read, write, or execute/search permission to a file. The file permission information is divided into three parts: owner, group, and other. Each part is used with the corresponding file class of processes. These permissions are contained in the *file mode*, as described in the package *POSIX\_Permissions*. (C/PA) 1003.5-1992

(2) Information about a file that is used, along with other information, to determine if a process has read, write, or execute/search permission to a file. The file permission information is divided into three parts: owner, group, and other. Each part is used with the corresponding file class of processes. These permissions are contained in the *file mode*, as described in the package *POSIX\_Permissions*. (C/PA) 1003.5b-1995

**filename portability** A concept of the underlying system, as follows: Filenames should be constructed from the portable filename character set because the use of other characters can be confusing or ambiguous in certain contexts. (C/PA) 9945-1-1996, 9945-2-1993

**file permission bits** Information about a file that is used, along with other information, to determine if a process has read, write, or execute/search permission to a file. The bits are divided into three parts: owner, group, and other. Each part is used with the corresponding file class of processes. These bits are contained in the *file mode*. (C/PA) 9945-1-1996, 9945-2-1993

**file processing** The periodic updating of one or more master files to reflect the effects of current data, often from a transaction file. For example, a monthly run updating the inventory file. (C) 610.2-1987

**file-protection ring** *See:* write ring.

**file serial number** (1) A per-file-system unique identifier for a file. File serial numbers are unique throughout a file system. (C/PA) 9945-1-1996, 9945-2-1993

(2) A per-file-system unique value for a file. File serial numbers are unique throughout a file system. (C/PA) 1003.5-1992, 1003.5b-1995

**file server** On a network, a server that provides access to requesters at the file level; that is, an entire file or a file segment is sent to a requestor. *See also:* database server; disk server; mail server; network server; print server; terminal server. (C) 610.7-1995

**file system** (1) A collection of files and certain of their attributes. It provides a name space for file serial numbers referring to those files. (C/PA) 9945-1-1996, 9945-2-1993

(2) A collection of files and certain of their attributes. Each file system provides a separate binding of file serial numbers to files. A given file serial number is associated with at most one file in a file system, but it may refer to distinct files in distinct file systems. That is, each file system defines a new *name space*, giving meaning to the *names* (file serial numbers) that designate files. (C/PA) 1003.5-1992, 1003.5b-1995

**fileset** Defines the files that make up a software object, and is the lowest level of software object that can be specified as input to the software administration utilities. (C/PA) 1387.2-1995

**file storage structure** The storage directories in the software packaging layout under which the actual software files for each fileset are located. (C/PA) 1387.2-1995

**filestore action** One of the actions specified as part of the definition of the virtual filestore. (C/PA) 1238.1-1994

**file tidying** *See:* file cleanup.

**file times update** A concept of the underlying system, as follows. Each file has three distinct associated time values: *st\_atime*, *st\_mtime*, and *st\_ctime*. The *st\_atime* field is associated with the times that the file data is accessed; *st\_mtime* is associated with the times that the file data is modified; and *st\_ctime* is associated with the times that file status is changed. These values are returned in the file characteristics structure. Any function in this standard that is required to read or write file data or change the file status indicates which of the appropriate time-related fields are to be "marked for update." If an implementation of such a function marks for update a time-related field not specified by this standard, this shall be documented, except that any changes caused by pathname resolution need not be documented. For the other functions in this standard (those that are not explicitly required to read or write file data or change file status, but that in some implementations happen to do so), the effect is unspecified. An implementation may update fields that are marked for update immediately, or it may update such fields periodically. When the fields are updated, they are set to the current time and the update marks are cleared. All fields that are marked for update shall be updated when the file is no longer open by any process or when a *stat()* or *fstat()* is performed on the file. Other times at which updates are done are unspecified. Updates are not done for files on read-only file systems. (C/PA) 9945-1-1996, 9945-2-1993

**file transfer protocol** A protocol for transferring files between computers. (C) 610.7-1995

**file type** *See:* file.

**filiform corrosion** *See:* underfilm corrosion.

**fill** (1) (computer graphics) To insert a color, pattern, or hatch into a closed polygon or area bounded by lines or curves. *Synonyms:* area fill; polygon fill. (C) 610.6-1991

(2) (token ring access method) A bit sequence that may be either 0 bits, 1 bits, or any combination thereof. (C/LM) 802.5-1989s

(3) A sequence of data symbols of any combination of 0 and 1 data bits (as opposed to non-data-J and non-data-K bits) whose primary purpose is to maintain timing and spacing between frames and tokens. (C/LM) 802.5-1995

(4) (data management) *See also:* character fill; filler character; zero fill. (C) 610.5-1990

holding register

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homogeneous computer network

**holding register (hybrid computer linkage components)** The register, in a double-buffered digital-to-analog converter (DAC) or a digital-to-analog multiplier (DAM), that holds the next digital value to be transferred into the dynamic register. (C) 166-1977w

**holding time (1) (data transmission)** The length of time a communication channel is in use for each transmission. Includes both message time and operating time. (PE) 599-1985w  
 (2) The interval of time within which the decrease of the test voltage due to leakage, prior to the discharge, is not greater than 10% when measured with an instrument that has a dc resistance greater than  $10^{16} \Omega$  and a capacitance less than 10 pF. (EMC) C63.16-1993

**holding tone (1) (telecommunications)** A test tone in the range of 1002 to 1020 Hz, having specific requirements as specified in IEEE Std 743-1984. The level of the holding tone is specified as part of the test requirement. The tone is used to measure analog circuit impairments. (COM) 1007-1991  
 (2) The tone, near 1 kHz, transmitted over a telecommunication circuit for performing noise-with-tone, jitter, and transient impairment measurements. (COM) 743-1995

**hold off** *See: suspension of reclosing.*

**hold-off diode (charging inductors)** A diode that is placed in series with the charging inductor and connected to the common junction of the switching element and the pulse-forming network in a pulse generator. *Note:* The use of a hold-off diode in the charging circuit of a pulse-forming network allows the capacitors of the network to charge to full voltage and remain at this voltage until the switch conducts. This permits the use of pulse-repetition frequencies of equal to or less than twice the frequency of resonance charging. (MAG) 306-1969w

**old order** *See: suspension of reclosing.*

**old out** Operating order, operating-order identification tag, or marker. *Synonym:* hold card. (PE/T&D) 516-1995

**old time (1)** The total time that a trunk, channel, or circuit is occupied by a call. (C) 610.7-1995

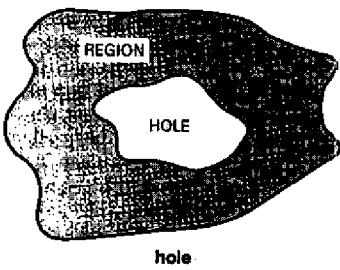
(2) (A) The amount of time information may be retained in dynamic storage before needing to be refreshed or the information lost. *Synonym:* output hold time. (B) The elapsed time during which a program is on hold. (C) The amount of time during which data presented to a flip-flop must be maintained after the clock transition in order for the data to be accurately stored. (C) 610.10-1994

**holdup-alarm attachment** A general term for the various alarm-initiating devices used with holdup-alarm systems, including holdup buttons, footrails, and others of a secret or unpublished nature. *See also:* protective signaling. (EEC/PE) [119]

**holdup-alarm system** An alarm system signaling a robbery or attempted robbery. *See also:* protective signaling. (EEC/PE) [119]

**hole (1) (semiconductor)** A mobile vacancy in the electronic valence structure of a semiconductor that acts like a positive electron charge with a positive mass. *See also:* semiconductor. (ED) 216-1960w

(2) (image processing and pattern recognition) In image processing, a connected component of the complement of a region, that is surrounded by the region.



(C) 610.4-1990

(3) In a semiconductor, a conceptual unit of charge opposite to that of an electron. *Note:* A hole occurs when an electron is lost from an atom, and "moves" when an electron is lost from an adjacent atom. (C) 610.10-1994

**hole burning (laser maser)** (of an absorption or an emission line) The frequency dependent saturation of attenuation or gain that occurs in an inhomogeneously broadened transition when the saturating power is confined to a frequency range small compared with the inhomogeneous linewidth. (LEO) 586-1980w

**hole pattern** A punching configuration or an array of holes that represent a single character in a data medium such as paper tape, or punch cards. (C) 610.10-1994

**Hollerith card** *See:* punch card.

**hollow-core annular conductor (hollow-core conductor)** A conductor composed of a plurality of conducting elements disposed around a supporting member that does not fill the space enclosed by the elements; alternatively, a plurality of such conducting elements disposed around a central channel and interlocked one with the other or so shaped that they are self-supporting. *See also:* conductor. (PE/T&D) [10]

**hollow-core conductor** *See:* hollow-core annular conductor.

**home address** The information written on every track of a magnetic disk, identifying the relative track number of that track. (C) 610.10-1994

**home area (telephone switching systems)** The numbering plan area in which the calling customer is located. (COM) 312-1977w

**home computer** A personal computer designed to be used in the home. (C) 610.10-1994, 610.2-1987

**home directory** The current directory associated with a user at the time of login. (C/PA) 9945-2-1993

**home key (A)** A cursor control key that moves the cursor to the starting point of the screen, usually the upper left-hand corner. (B) A cursor control key that moves the cursor to the starting point of a file. (C) 610.10-1994

**home signal (railway practice)** A fixed signal at the entrance of a route or block to govern trains or engines entering or using that route or block. (EEC/PE) [119]

**homing (1) (navigation)** Following a course directed toward a point by maintaining constant some navigational coordinate (other than altitude). *See also:* radio navigation. (AE) [42], 686-1982s

(2) (telephone switching systems) Resetting of a sequential switching operation to a fixed starting point. (COM) 312-1977w

**homing beacon (navigation aid terms)** A beacon that provides homing guidance. (AE) 172-1983w

**homing guidance** That form of missile guidance wherein the missile steers itself toward a target by means of a mechanism actuated by some distinguishing characteristic of the target. *See also:* guided missile. (EEC/PE) [119]

**homing relay** A stepping relay that returns to a specified starting position prior to each operating cycle. *See also:* relay. (EEC) [87]

**homochromatic gain (optoelectronic device)** The radiant gain or luminous gain for specified identical spectral characteristics of both incident and emitted flux. *See also:* optoelectronic device. (ED) [46]

**homodyne reception (zero-beat reception)** A system of reception by the aid of a locally generated voltage of carrier frequency. (EEC/PE) [119]

**homogeneous cladding (fiber optics)** That part of the cladding wherein the refractive index is constant within a specified tolerance, as a function of radius. *See also:* cladding; tolerance field. (Std100) 812-1984w

**homogeneous computer network** A computer network of similar host computers, such as those of one model by the same manufacturer. *Contrast:* heterogeneous computer network. (C) 610.7-1995

## nonspecific subordinate reference

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normal

**nonspecific subordinate reference** A knowledge reference that holds information about a DSA that holds one or more unspecified subordinate entries.

(C/PA) 1224.2-1993, 1326.2-1993, 1327.2-1993, 1328.2-1993

**non-spinning reserve** That operating reserve not connected to the system but capable of serving demand within a specified time, or interruptible load that can be removed from the system in a specified time. (PE) 858-1993

**nonspinning reserve (power operations)** That operating reserve capable of being connected to the bus and loaded within a specified time. (PE) 858-1987s

**nonstop switch (elevators)** A switch that, when operated, will prevent the elevator from making registered landing stops. *See also:* control. (EEC/PE) [119]

**nonstorage display (display storage tubes)** Display of nonstored information in the storage tube without appreciably affecting the stored information. *See also:* storage tube. (ED) 158-1962w

**nonsustained disruptive discharge** A momentary disruptive discharge. (PE) 4-1995

**nonsynchronous** *See:* asynchronous.

**nonsynchronous (interdigital) transducer** An interdigital transducer that has nonuniform electrode center-to-center spacing. (UFFC) 1037-1992

**nonsynchronous transmission (data transmission)** A transmission process so that between any two significant instants in the same group, there is always an integral number of unit intervals. Between two significant instants located in different groups, there is not always an integral number of unit intervals. *Note:* In data transmission, this group is a block or a character. In telegraphy, this group is a character. (PE) 599-1985w

**non-systematic jitter** *See:* uncorrelated jitter.

**nonterminal node (data management)** In a tree, a node that can have one or more subtrees. *Synonyms:* branch node; internal node. *Contrast:* terminal node. *See also:* root node. (C) 610.5-1990

**nonthermal fire hazard** A hazard resulting from combustion products (such as smoke and toxic and corrosive fire products). (DEI) 1221-1993

**nontouching loop set (network analysis)** A set of loops no two of which have a common node. (CAS) 155-1960r

**nontransitive dependency** A type of dependency among attributes in a relation, in which a nonprime attribute A is said to be nontransitively dependent on another attribute B if and only if A is dependent on B, and there is another attribute C that is functionally dependent on B but does not functionally determine A. *Contrast:* transitive dependency. (C) 610.5-1990

**nonuniformity (transmission lines and waveguides)** The degree with which a characteristic quantity, for example, impedance, deviates from a constant value along a given path. *Note:* It may be defined as the maximum amount of deviation from a selected nominal value. For example, the nonuniformity of the characteristic impedance of a slotted coaxial line may be 0.05 ohm due to dimensional variations. (IM) [40]

**non-utility generator** A facility for generating electricity that is not exclusively owned by an electric utility and that operates connected to an electric utility system. (PE) 858-1993

**nonvented fuse (or fuse unit)** A fuse without intentional provision for the escape of arc gases, liquids, or solid particles to the atmosphere during circuit interruption. (PE/SWG) C37.100-1992, C37.40-1993

**nonvented power fuse (installations and equipment operating at over 600 volts, nominal)** A fuse without intentional provision for the escape of arc gases, liquids, or solid particles to the atmosphere during circuit interruption. (NEC/NESC) [86]

**nonventilated (power and distribution transformers)** So constructed as to provide no intentional circulation of external air through the enclosure. (PE) C57.12.80-1978r

**nonventilated dry-type transformer (dry-type general purpose distribution and power transformers) (power and distribution transformers)** A dry-type transformer which is so constructed as to provide no intentional circulation of external air through the transformer, and operating at zero gauge pressure. (PE) C57.12.80-1978r, C57.94-1982r

**nonventilated enclosure** An enclosure so constructed as to provide no intentional circulation of external air through the enclosure. *Note:* Doors or removable covers are usually gasketed and humidity control may be provided by filtered breathers. (PE/SWG) C37.100-1992, C37.23-1987r

**nonvolatile memory (NVM)** (1) A memory in which the data content is retained when power is no longer supplied to it. (ED) 641-1987w

(2) Memory whose contents are retained after power has been shut off. (BA/C) 14536-1995

(3) Computer memory whose contents are preserved when the system power is off. (BA/C) 1275-1994

(4) Memory that retains its contents even through power failures. (C/MM) 1596-1992

(5) Read/write storage that is preserved through losses of power. (C/MM) 1212-1991s

**nonvolatile storage (1) (test, measurement, and diagnostic equipment)** A storage device which can retain information in the absence of power. *Contrast:* volatile storage. (MIL) [2]

(2) A type of storage whose contents are not lost when power is lost. *Contrast:* volatile storage. *See also:* bubble memory; erasable storage. (C) 610.10-1994

**no-op** *See:* no-operation.

**no-operation (no-op) (1) (computers)** An instruction that specifically instructs the computer to do nothing, except to proceed to the next instruction in sequence. *Synonym:* no-op. (C) [20], [85]

(2) **(software)** A computer operation whose execution has no effect except to advance the instruction counter to the next instruction. Used to reserve space in a program or, if executed repeatedly, to wait for a given event. Often abbreviated no-op. *Synonyms:* do-nothing operation; no-op. (C) 610.12-1990

**no-op instruction** *See:* dummy instruction.

**NOR** (1) **(mathematics of computing)** A Boolean operator having the property that if P is a statement, Q is a statement, R is a statement, . . . , then the NOR of P, Q, R, . . . is true if and only if all statements are false. *Note:* P NOR Q is often represented by  $P \downarrow Q$ . *Synonym:* nondisjunction.

P	Q	$P \downarrow Q$
0	0	1
0	1	0
1	0	0
1	1	0

**NOR truth table**

(C) 1084-1986w

(2) **(software)** *See also:* notice of revision.

(C) 610.12-1990

**NOR element** *See:* NOR gate.

**NOR gate** A gate that performs the Boolean operation of non-disjunction. *Synonyms:* inclusive NOR gate; NOR element; NOT-OR. *See also:* OR gate. (C) 610.10-1994

**norator** A two-terminal ideal element the current through which and the voltage across which can each be arbitrary. (CAS) [13]

**normal** (1) **(state of a superconductor)** The state of a superconductor in which it does not exhibit superconductivity. Example: Lead is normal at temperatures above a critical temperature. *See also:* superconducting; superconductivity.

(ED) [46]

**smashboard signal**

1005

**sodium vapor lamp transformers**

**smashboard signal** A signal so designed that the arm will be broken when passed in the stop position. (EEC/PE) [119]

**SME** See: systems management entity; subject matter expert.

**SMFA** See: specific management functional areas.

**SMIB** See: security management information base.

**smog** See: fog.

**smoke** The airborne solid and liquid particulates and gases evolved when a material undergoes pyrolysis or combustion.

(DEI) 1221-1993

**smoke detector (fire protection devices)** A device which detects the visible or invisible particles of combustion.

(NFPA) [16]

**smooth** To apply procedures that decrease or eliminate rapid fluctuations in data.

(C) 1084-1986w

**smooth current (rotating electric machinery)** Current that remains unidirectional and the ripple of which does not exceed 3%.

(PE) 11-1980r

**smoothing** Any image enhancement technique in which the effect of noise in the original image is reduced. *Synonyms:* noise cleaning; noise suppression.

(C) 610.4-1990

**smothered-arc furnace** A furnace in which the arc or arcs is covered by a portion of the charge.

(EEC/PE) [119]

**SMT** See: station management.

**S/N** See: signal-to-noise ratio.

**SNA** See: systems network architecture.

**snake** See: conductor cover; fish tape.

**snaphook** A connector comprised of a hook-shaped member with a normally closed keeper or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. There are two types of snaphooks: a) The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection, or b) The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection.

(PE/T&D) 1307-1996

**snapshot** When used in connection with alternating-current testing, a quasi-flashover or quasi-sparkover, characterized by failure of the alternating-current power source to maintain the discharge, thus permitting the dielectric strength of the specimen to recover with the test voltage still applied.

(PE) [55]

**snapshot** A copy of all or portions of the data contained in storage or in a database at a particular point in time. *Note:* Considered a "picture" of the data.

(C) 610.5-1990

**snapshot dump** (A) A dynamic dump of the contents of one or more specified storage areas. *See also:* change dump; dynamic dump; memory dump; postmortem dump; selective dump; static dump. (B) (computers) A selective dynamic dump performed at various points in a machine run.

(C) [20], [85]

**snarf** The action taken by a module when it takes a copy of data passing by on the bus, even though it did not request it.

(BA/C) 10857-1994, 896.3-1993, 896.4-1993

**snatch block (conductor stringing equipment) (power line maintenance)** A device normally designed with a single sheave, a shell, and an attachment hook or shackle. One side of the shell can be opened to eliminate the need for threading of the line. It is commonly used for lifting loads on a single line, or as a device to control the position or direction, or both, of a fall line or pulling line. *Synonyms:* skookum; Washington; Western.

(PE/T&D) 516-1995, 524-1992

**SNM cable** See: shielded nonmetallic-sheathed cable.

**SNOBOL** See: StriNg-Oriented symBOLic Language.

**snoop** The action taken by a module on a transaction when it is not the master that originated the transaction or the repository of last resort for the data, but it still monitors the transaction. Cache memories snoop transactions to maintain coherence.

(BA/C) 10857-1994, 896.3-1993, 896.4-1993

**snow (1) (intensity-modulated display)** A varying speckled background caused by noise. *See also:* radar; television.

(BT) [34]

**(2) (overhead power lines)** Precipitation composed of white or translucent ice crystals, chiefly in complex branched hexagonal form and often aggregated into snowflakes. For weather observation purposes, the intensity of snow is characterized as:

- "Very light," when scattered flakes do not completely cover or wet an exposed surface, regardless of duration;
- "Light," when the visibility is 1.0 km or more;
- "Moderate," when the visibility is less than 1.0 km but more than 0.5 km;
- "Heavy," when the visibility is less than 0.5 km. The classification of snowfall according to its intensity is identical to that of rain, where the equivalent amount of water accumulated in millimeters per hour is measured. An easier but less accurate approach uses the depth of the accumulated snow.

(PE/T&D) 539-1990

**S/N ratio** See: signal-to-noise ratio.

**SNRM** See: set normal response mode.

**snr psoph (data transmission)** Signal-to-noise ratio measured with psophometrically weighted receiver; expressed in dB (decibels).

(PE) 599-1985w

**snub** See: anchor.

**snubber (1) (converter circuit elements) (self-commutated converters)** An auxiliary circuit element or combination of elements employed to modify the transient voltage or current of a semiconductor device. *See also:* polarized snubber; series snubber; shunt snubber.

(IA) 936-1987w

**(2) (load commutated inverter synchronous motor drives)** An auxiliary circuit element or combination of elements employed to modify the transient voltage or current of a semiconductor device during switching. (A) (shunt snubber) Circuit elements, usually including a capacitor and a resistor connected in shunt with a switching device to limit the rate of rise of voltage or the peak voltage across the device (or both) when switching from a conducting to a blocking state or when subjected to an external voltage transient. (B) (series snubber) Circuit elements, usually including an inductor, connected in series with a switching device to limit the rate of rise or fall of current through the device when switching on or off, respectively.

(IA) 995-1987w

**snub structure** A structure located at one end of a sag section and considered as a *zero* point for sagging and clipping offset calculations. The section of line between two such structures is the sag section, but more than one sag section may be required in order to sag properly the actual length of conductor that has been strung. *Synonyms:* O structure; zero structure.

(PE/T&D) 524-1992

**SO** See: shift-out character.

**soak, relay** See: relay soak.

**sock** See: grip, woven wire.

**socket cover** The removable portion of the enclosure that provides access to the meter socket wiring.

(ELM) C12.7-1993

**socket rim** That part of a ring-type meter socket that is required to accommodate the socket sealing ring that holds a detachable watthour meter in place. The socket rim may be a part of the cover that is secured in place by a fastener such as a latch or crossbar.

(ELM) C12.7-1993

**socket sealing ring (watthour meter sockets)** A ring used to overlap the socket rim and the detachable watthour meter cover ring to hold and provide means for sealing a detachable watthour meter in place.

C12.7-1993

**sodium vapor lamp transformers (multiple-supply type) (power and distribution transformers)** Transformers, autotransformers, or reactors for operating sodium vapor lamps for all types of lighting applications, including indoor, outdoor area, roadway, and other process and specialized lighting.

(PE) C57.12.80-1978

**sweep accuracy**

1068

**switch**

ity. *Notes:* 1. Examples of swept quantities are: the displacement of a scanning spot on the screen of a cathode-ray tube; and the frequency of a wave. 2. Unless otherwise specified, a linear time function is implied; but the sweep may also vary in some other controlled and desirable manner.

(BT/IM) [34], [40]

**sweep accuracy (oscilloscopes)** Accuracy of the horizontal (vertical) displacement of the trace compared with the reference independent variable, usually expressed in terms of average rate error as a percent of full scale. *See also:* oscilloscope.

(IM) 311-1970w

**sweep-delay accuracy (oscilloscopes)** Accuracy of indicated sweep delay, usually specified in error terms.

(IM) 311-1970w

**sweep, delayed** *See:* delayed sweep.

**sweep duration (sawtooth sweep)** The time required for the sweep ramp. *See also:* oscilloscope.

(IM) [40]

**sweep duty factor** For repetitive sweeps, the ratio of the sweep duration to the interval between the start of one sweep and the start of the next. *See also:* oscilloscope.

(IM) [40]

**sweep, expanded** *See:* magnified sweep.

**sweep, external (oscilloscopes)** A sweep generated external to the instrument.

(IM) 311-1970w

**sweep, free-running** *See:* free-running sweep.

**sweep frequency (oscilloscopes)** The sweep repetition rate. *See also:* oscilloscope.

(IM) [40]

**sweep gate (oscilloscopes)** Rectangular waveform used to control the duration of the sweep; usually also used to unblank the cathode-ray tube for the duration of the sweep. *See also:* oscilloscope.

(IM) [40]

**sweep, gated** *See:* gated sweep.

**sweep generator (oscilloscopes)** A circuit that generates a signal used as an independent variable; the signal is usually a ramp, changing value at a constant rate.

(IM) 311-1970w

**sweep mode control (oscilloscopes)** The control used on some oscilloscopes to set the sweep for triggered, free-running, or synchronized operation.

(IM) 311-1970w

**sweep oscillator** An oscillator in which the output frequency varies continuously and periodically between two frequency limits. *See also:* telephone station.

(COM) [50]

**sweep-out time, charge** *See:* charge collection time.

**sweep range (oscilloscopes)** The set of sweep-time/division settings provided. *See also:* oscilloscope.

(IM) [40]

**sweep recovery time (oscilloscopes)** The minimum possible time between the completion of one sweep and the initiation of the next, usually the sweep holdoff interval. *See also:* oscilloscope.

(IM) [40]

**sweep, recurrent** *See:* recurrent sweep.

**sweep reset (oscilloscopes)** In oscilloscopes with single-sweep operation, the arming of the sweep generator to allow it to cycle once. *See also:* oscilloscope.

(IM) [40]

**sweep, sine-wave** A sweep generated by a sinusoidal function. *See also:* oscillosograph.

(IM) 311-1970w

**sweep, stairstep (oscilloscopes)** An incremental sweep in which each step is equal. The electrical deflection waveform producing a stairstep sweep is usually called a staircase or stairstep waveform. *See also:* oscillosograph.

(IM) 311-1970w

**sweep switching (automatic)** Alternate display of two or more time bases or other sweeps using a single-beam cathode-ray tube; comparable to dual- or multiple-trace operation of the deflection amplifier.

(IM) 311-1970w

**sweep time (acoustically tunable optical filter)** The time to continuously tune the filter over its spectral range.

(UFFC) [17]

**sweep time division (spectrum analyzer)** The nominal time required for the spot in the reference coordinate to move from one graticule division to the next. Also the name of the control used to select this time.

(IM) 748-1979w

**swell (1)** A momentary increase in the power frequency voltage delivered by the mains, outside of the normal tolerances, with a duration of more than one cycle and less than a few seconds.

*See also:* surge. (PE/PSPD) C62.41-1991r, C62.48-1995

**(2)** An rms increase in the ac voltage, at the power frequency, for durations from a half-cycle to a few seconds. See figure below. *See also:* overvoltage; surge.

(IA/PE/T&amp;D) 1100-1992, 1250-1995

**swellable powder** A powder that swells upon contact with moisture. A jelly like material is formed to block the longitudinal transmission of moisture.

(PE) 1142-1995

**swim** The visual misrepresentation that occurs when images on a display surface appear to move about their normal positions.

(C) 610.6-1991

**swinging compass (navigation aid terms)** An accurate, portable magnetic compass used to indicate magnetic headings during aircraft magnetic compass calibration.

(AE) 172-1983w

**swingout panel (packaging machinery)** A panel that is hinge-mounted in such a manner that the back of the panel may be made accessible from the front of the enclosure.

(IA) 333-1980w

**swing rack cabinet** An assembly enclosed at the top, side, and rear with front hinged door for front access having a swing open frame for equipment mounting (e. g., nominal 19-inch wide chassis and subpanel assemblies).

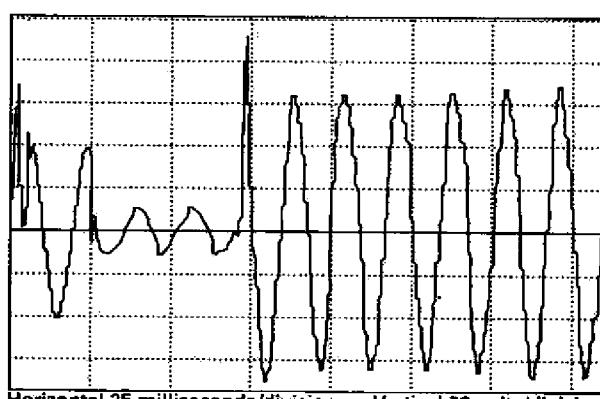
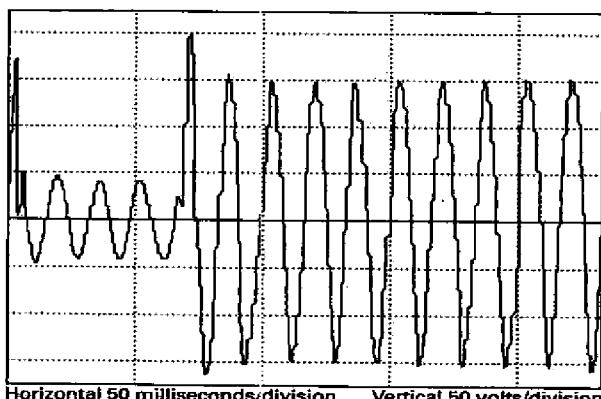
(PE/SWG) C37.100-1992, C37.21-1985r

**switch (1) (switching system) (telephone-loop performance)** A system that establishes communication channels among two or more of its interfaces at customers' demand.

(COM) 820-1984r

**(2) (high-voltage switchgear)** A device designed to close or open, or both, one or more electric circuits. *See also:* switching device.

(PE/SWG) C37.40-1993



Source: [B1].

swells occurring upon recovery from a remote system fault

SUN00010783

**switch base**

1069

(3) (computers) A device or programming technique for making a selection, for example, a toggle, a conditional jump.

(C) [20], [85]

(4) (electric and electronics parts and equipment) A device for making, breaking, or changing the connections in an electric circuit. *Note:* a switch may be operated by manual, mechanical, hydraulic, thermal, barometric, or gravitational means, or by electromechanical means not falling within the definition of "relay."

(GSD) 200-1975r

(5) A device that connects ringlets and has queues. It can behave as a consumer (when accepting remote subactions) and as a producer (when forwarding the subaction to another ringlet). It may be visible as a node, with a nodeId, or be transparent, with no nodeId. A switch differs from a bridge in that a switch may connect more than two ringlets, but a bridge connects only two. A switch is generally assumed to connect multiple instances of the same bus standard, while a bridge may connect different bus standards.

(C/MM) 1596-1992

(6) A routing device (for example, a box or board) providing a set of numbered node interfaces, constructed from one or more switch chips (or by other methods). *See also:* fabric; node interface; switch chip.

(BA/C) 1355-1995

(7) (A) An electrical or mechanical device used for opening, closing, or changing the connection of a circuit. *Synonym:* switchpoint. *See also:* DIP switch; display switch; function switch; relay; sense switch. (B) To open, close, or change the connection of a circuit as in (A). (C) A device used for making a selection, as in a toggle.

(C) 610.10-1994

(8) A device for opening and closing or for changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

(NES/C/T&amp;D) C2-1997, C2.2-1960

**switch base** The main members to which the insulator units are attached.

(PE/SWG) C37.30-1992

**switchboard (1) (electric power system)** A large single panel, frame, or assembly of panels, on which are mounted, on the face or back or both, switches, overcurrent and other protective devices, buses, and usually instruments. *Note:* Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets. *See also:* center of distribution; distribution center; panelboard.

(NES/C) [86]

(2) When referred to in connection with supply of electricity, a large single panel, frame, or assembly of panels, on which are mounted (on the face, or back, or both) switches, fuses, buses, and usually instruments.

(T&amp;D) C2.2-1960

(3) A type of switchgear assembly that consists of one or more panels with electric devices mounted thereon, and associated framework. *Note:* Switchboards may be classified by function, that is, power switchboards or control switchboards. Both power and control switchboards may be further classified by construction as defined.

(NES/C/PE/SWG) C2-1997, C37.100-1992

**switchboard cord** A cord that is used in conjunction with switchboard apparatus to complete or build up a telephone connection.

(EEC/PE) [119]

**switchboard lamp (switchboard)** A small electric lamp associated with the wiring in such a way as to give a visual indication of the status of a call or to give information concerning the condition of trunks, subscriber lines, and apparatus.

(EEC/PE) [119]

**switchboard position (telephone switching systems)** That portion of a manual switchboard normally provided for the use of one operator.

(COM) 312-1977w

**switchboards and panels (electric installations on shipboard)**

A generator and distribution switchboard receives energy from the generating plant and distributes directly or indirectly to all equipment supplied by the generating plant. A subdistribution switchboard is essentially a section of the generator and distribution switchboard (connected thereto by a busfeeder and remotely located for reasons of convenience or economy) that distributes energy for lighting, heating, and

**switchgear assembly**

power circuits in a certain section of the vessel. A distribution panel receives energy from a distribution or subdistribution switchboard and distributes energy to energy-consuming devices or other distribution panels or panelboards. A panelboard is a distribution panel enclosed in a metal cabinet.

(IA) 45-1983r

**switchboard section (telephone switching systems)** A structural unit providing for one or more operator positions. A complete switchboard may consist of one or more sections.

(COM) 312-1977w

**switchboard supervisory lamp (cord circuit or trunk circuit)** A lamp that is controlled by one or other of the users to attract the attention of the operator.

(EEC/PE) [119]

**switchboard supervisory relay** A relay that controls a switchboard supervisory lamp.

(EEC/PE) [119]

**switch chip** A VLSI integrated circuit with two or more link interfaces, between which it provides packet routing. *See also:* link; switch.

(BA/C) 1355-1995

**switch compartment (metal-enclosed interrupter switchgear)** That portion of the switchgear assembly that contains one switching device, such as an interrupter switch, power fuse interrupter switch combination, etc., and the associated primary conductors.

(PE/SWG) C37.20.3-1996

**switch core** A magnetic core in which the core material generally has a high residual flux density and a high ratio of residual to saturated flux density; Switching does not occur when the magnetic force imposed on the core is below a threshold value.

(C) 610.10-1994

**switched bank** A capacitor bank designed for controlled operation.

(PE/T&amp;D) 1036-1992

**switched current** The prospective current to be broken during a switching operation by each set of main switching or transition contacts (resistance-type LTC) or transfer contacts (reactance-type LTC) incorporated in the arcing switch or arcing tap switch.

(PE) C57.131-1995

**switched network (1)** A computer interconnect that uses switches to allow intermodule communications.

(BA/C) 14536-1995

(2) A network, using a switching technique, to direct messages from the sender to the ultimate recipient. *See also:* circuit-switched network; store-and-forward switched network.

(C) 610.7-1995

**switched-service network (telephone switching systems)** An arrangement of dedicated switching facilities to provide telecommunications services for a specific customer.

(COM) 312-1977w

**switched virtual circuit** A virtual circuit that is established on an as-needed basis to interconnect any two end users attached to a network. *Note:* SVC service requires the definition of some call control procedures for the establishment, maintenance, and termination of the virtual circuit. An SVC may not be available when the user wants it if too many SVCs are open at once *See also:* permanent virtual circuit.

(C) 610.7-1995

**switched way (1)** A way connected to the bus through a three-pole, group operated switch.

(PE/SWG) C37.71-1984r

(2) A way connected to the bus through a switch.

(PE/SWG) C37.100-1992

**switchgear (1)** A general term covering switching and interrupting devices and their combination with associated control, instrumentation, metering, protective and regulating devices, also assemblies of these devices with associated interconnections, accessories and supporting structures used primarily in connection with the generation, transmission, distribution, and conversion of electric power.

(PE/SWG) C37.100-1992, C37.20.1-1993, C37.20.2-1993,

C37.20.3-1996

(2) (hydroelectric power plants) An assembly of equipment used to switch and control electrical power.

(PE) 1020-1988r

**switchgear assembly** An assembled equipment (indoor or outdoor) including, but not limited to, one or more of the follow-